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<p>(21) International Application Number: PCT/CA99/00847</p> <p>(22) International Filing Date: 16 September 1999 (16.09.99)</p> <p>(30) Priority Data: 09/158,785 23 September 1998 (23.09.98) US</p> <p>(71)(72) Applicant and Inventor: SCANDIFFIO, John [CA/CA]; 7 Alcina Avenue, Toronto, Ontario M6G 2E7 (CA).</p> <p>(74) Agent: EVERITT, Peter, R.; Kvas Miller Everitt, Suite 1502, 77 Bloor Street West, Toronto, Ontario M5S 1M2 (CA).</p>		<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KR, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published  <i>With international search report.  Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>
<p>(54) Title: GOLF CLUB</p> <p>(57) Abstract</p> <p>A golf club comprising a club head 3, having a ball striking surface (8), and a longitudinal shaft (2) having first and second ends. The first end (5) of the shaft extends from the club head (3) and the second end (4) of the shaft (2) has a grip (9) adapted to be grasped by the hands of a golfer. The grip (9) has a continuous reverse taper such that the diameter of the grip continuously increases in the direction of the club head (3).</p>		

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**TITLE:** Golf Club

**FIELD OF THE INVENTION**

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This invention relates to golf clubs, and in particular a form of golf club that includes a grip that is adapted to enhance the ability of a golfer to properly hold and control the club while striking a golf ball.

10

**BACKGROUND OF THE INVENTION**

Golf is a game that is literally enjoyed by millions on a world wide basis. The majority of individuals possess the athletic ability to swing a golf club such that it strikes a golf ball and causes the ball to generally be driven in a desired direction.

15

However, since the movements of the human body that are involved in the golf swing are both numerous and complex, few individuals possess the ability to accurately hit a golf ball over extended distances. Generally only professional players or those who practice and play the game on a frequent basis are able to both accurately strike the ball and maximize the distance over which the ball can be driven. Even in the case of frequent and professional players, mental lapses and loss of concentration can result in improper bodily movements that can affect both the accuracy and the distance of a golf shot.

20

The power that is transferred to a golf ball when it is struck by a golf club originates in a golfer's legs, back, shoulders, hips, arms, wrists and hands. All of these parts of the body work in conjunction during the golf swing and improper movement or utilization of any one part can have a deleterious effect on the overall shot. While the power for the swing is generated from the larger through to the smaller body parts, since the golf club is held entirely within the hands, all power generated by the body must be transferred to the club through the golfer's hands and his or her grip

on the club. Improper hand placement, sliding of the hands, or improper gripping pressure will result in wobble or an inefficient or misdirected transference of power to the club and a loss of compression transferred to the ball. The resulting shot may be off target and often travels a reduced distance. Proper gripping pressure of the  
5 club is absolutely essential to being able to hit a long and straight golf shot.

Conventional grips on golf clubs have a large or bulbous upper end and may or may not be tapered inwardly toward the club head. The large bulbous upper ends assists in preventing the club from slipping out of the hands of a golfer during the swing.  
10 However, golf grips of this nature necessitate the transference of a disproportionate amount of power through the third and fourth fingers of the golfer's hands. As a result the golfer is required to apply significant pressure to the grip in the area surrounding the third and fourth fingers. Many individuals do not possess sufficient strength in that portion of their hands to accurately control the club and maximize  
15 energy transference. Others exert excessive pressure on the grip resulting in a tensing of the hands and wrists. An overly tense grip can often have similar results to those that can occur where there is limited strength in the third and fourth fingers.

#### SUMMARY OF THE INVENTION

20 The invention therefore provides a golf club having a gripping means that readily enables an individual to easily grasp the club and that permits the transference of power and energy through the hands to the club irregardless of muscular or skeletal weaknesses in portions of the hands. The invention also reduces the tendency of  
25 individuals to apply excessive pressure to the grip of the club.

Accordingly, in one of its aspects the invention provides a golf club comprising a club head, having a ball striking surface, and a longitudinal shaft having first and second ends, said first end of said shaft extending from said club head, said second  
30 end of said shaft having gripping means thereon adapted to be grasped by the hands

of a golfer, said gripping means having a continuous reverse taper such that the diameter of said gripping means continuously increases in the direct of said club head.

5 Further objects and advantages of the invention will become apparent from the following description taken together with the accompanying drawings.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

10 For a better understanding of the present invention, and to show more clearly how it may be carried into effect, reference will now be made, by way of example, to the accompanying drawings which show the preferred embodiments of the present invention in which:

15 Figure 1 is a side elevational view of the golf club according to the present invention;

Figure 2 is a partial cross-sectional view taken along the line 2-2 of Figure 1;

20 Figure 3 is a cross-sectional view taken along the line 3-3 of Figure 2; and,

Figure 4 is a sketch showing how the golf club of the present invention is held in the left hand of a right handed golfer.

25

#### **DESCRIPTION OF THE PREFERRED EMBODIMENT**

The present invention may be embodied in a number of different forms. However, the specification and drawings that follow describe and disclose only some of the specific forms of the invention and are not intended to limit the scope of the

invention as defined in the claims that follow herein. What has been invented is a new concept for the grip of a golf club, the preferred embodiment of which is described below.

5      The golf club of the present invention is identified in the attached drawings generally by the reference numeral 1. Club 1 is primarily comprised of a shaft 2 and a club head 3. Shaft 2 has an upper end 4 and a lower end 5. Club head 3 has a toe portion 6, a heel 7, and a striking face 8. It is expected that in most instances shaft 2 and club head 3 will be manufactured as separate components with lower end 5 of shaft  
10     2 attached to heel 7 of the club head by one of a variety of different means of attachment. However, it will also be appreciated that shaft 2 and club head 3 could be of unitary construction and manufactured as a single unit.

Golf club 1 further includes a gripping means 9 attached to upper end 4 of shaft 2.  
15     Gripping means 9 is adapted so as to allow club 1 to be grasped by the hands of a golfer so that the club may be securely held while striking a golf ball. Gripping means 9 has an upper end 11, and lower end 12 and a longitudinal axis generally corresponding to the axis of shaft 2 when the gripping means is received over the upper end of the shaft. As shown in Figures 2 and 3, in the preferred embodiment  
20     gripping means 9 includes a longitudinal central bore 10 into which may be received upper end 4 of shaft 2. In order to retain shaft 2 within bore 10, an adhesive may be applied or the "fit" of the shaft within the bore may be dimensioned so that the friction between the outer surface of the shaft and the internal surface of bore 10 is sufficient to prevent accidental slipping or removal of the grip. Alternately, a variety  
25     of other mechanisms may be employed to secure gripping means 9 onto the upper portion 4 of shaft 2. For example, fastening mechanisms, including bolts, screws and rivets, may be utilized. In a further embodiment gripping means 9 may be threadably engaged with upper end 4 of shaft 2.

The particular materials from which shaft 2, club head 3 and gripping means 9 are comprised are not critical to the present invention and they may be chosen from any of the standard materials commonly used in the construction of golf clubs. For example, shaft 2 may be comprised of steel or other metallic alloys, or may be formed from graphite, fibreglass, or other synthetic compound. As shown in Figures 2 and 3 in the preferred embodiment shaft 2 will be hollow, however, in an alternate embodiment it could also be comprised of a solid rod. Club head 3 may be comprised of wood, a metal alloy or a metallic graphite compound. With respect to gripping means 9, in most instances it is expected that the gripping means would be comprised of a rubberized material that provides a relatively soft gripping surface while at the same time presenting good adhesion between the gripping surface and a golfer's hands. To some extent a rubberized material also has a dampening or anti-vibrational effect and will help prevent the transmission of vibrational energy through the club and to the golfer's hands and wrists. The gripping means may also include an integrated cut cord material as is commonly used in order to increase adhesion. In still other cases gripping means 9 may be comprised of a wrapped grip, made from leather or a synthetic leather-type material, wound around a rubberized core.

As shown in Figures 1 and 2, gripping means 9 is constructed such that it has a continuous reverse taper so that its diameter increases in the direction of club head 3. Gripping means 9 is also generally circular in cross-section such that its overall shape is of a frusto-conical nature. Within this construction it will be appreciated that the cross-sectional diameter of gripping means 9 at its upper end 11 is smaller than the cross-sectional diameter at its lower end 12. The degree of inclination or reverse taper between upper end 11 and lower end 12 is constant such that the gripping means is devoid of any "waists" or "bulges" along its length.

The function and operation of golf club 1, and in particular gripping means 9, will now be discussed in more detail. The following discussion is presented with

reference to a right-handed golfer wherein the club is held such that the golfer's right hand is positioned lower on the grip than his or her left hand.

5       The traditional golf grip requires the golfer to hold gripping means 9 along the portion of his or her palm that is intersected by the fingers such that the fingers are able to wrap around the grip. This portion of the hand is often referred to as the finger-palm seam. For a right-handed golfer the club is held primarily with the last three fingers of the left hand (the hand situated at the top of the grip) and the last two or last three fingers of the right hand (positioned on the lower portion of the grip).  
10      For the most part a golfer's thumb and index finger play only minor roles in holding the club and are largely used for purposes of control as opposed to the transference of power and momentum to the club.

15      A sound golf swing is one in which the momentum of the various parts of the body is transferred to the golf club in a smooth and controlled manner. The fluid transference of momentum is one of the most important components in maximizing the power and force applied by the face of the golf head to a golf ball. The seemingly effort-free look and feel of a swing of an accomplished golfer is sometimes referred to as the effortless swing or stroke. One of the hallmarks of the  
20      effortless swing is the ability of the golfer to maintain flexibility within his or her various body parts, and in particular the wrists, in order to maintain the velocity generated during the swing and to maximize the transference of momentum.

25      Gripping means 9 of the present invention is particularly adapted to facilitate the effortless golf stroke, maximize the transference of momentum, and enhance the power and force applied by face 8 of club head 3 to a golf ball. The frusto-conical or reverse tapered structure of gripping means 9 allows the gripping means to readily fit along the finger-palm seam of a golfer's hands. It will be appreciated that since the fourth finger is typically the shortest finger on the hand a reversed tapered grip,  
30      wherein the cross-sectional diameter of the grip is smaller at the point that is grasped

by the fourth finger than at the point that is grasped by the first and second fingers, will be easier to hold and will more naturally fit the shape and structure of the human hand. This feature of the invention is shown more specifically in Figure 4.

5 During the golf swing centripetal force is created and maintains the club head moving in a circular and predictable path or arc. The centripetal force is directed radially toward the centre of rotation of the club and helps to maintain the club's circular movement. Accordingly, during the swinging motion centripetal force will tend to push the club toward the golfer's hands. The effect will be an inwardly directed pressure upon the hands. As a result of the reverse tapered nature of gripping means 9, it will then be appreciated that any inward pressure will result in an ever tightening fit between gripping means 9 and the finger-palm seam of the hands. This tightening of the grip is achieved without the necessity of the golfer having to physically apply pressure by further contracting hand, wrist and forearm  
10 muscle groups.  
15

The more velocity that the swing generates, and the greater the mass of the golf club, the greater the centripetal force applied during the swinging motion and the better the grip of the hands on the club. The more snug the "fit" between gripping means 20 9 and the golfer's hands, without the increase of gripping or squeezing pressure on the part of the golfer, the better the grip of the hands on the club. This feature of gripping means 9, in particular, assists junior golfers, and those with limited grip potential, to hold the golf club snugly and securely during the swing. Without this feature of gripping means 9 the golfer would normally compensate by applying additional force to the gripping means thereby dampening the transfer of momentum  
25 and compressions to the ball.

The frusto-conical or reverse tapered nature of gripping means 9 further helps to maintain the optimum angle between the golfer's wrist and hands and shaft 2 during  
30 the golf stroke. For a right handed golfer at the lowest point of the stroke the left

arm will be pointing straight down and the left wrist will be fully cocked. At this point the golfer's arms and wrists are positioned at an optimum angle for release of momentum upon impact with the golf ball. Maximum velocity of the swing will also have been attained and as a result centripetal force will be maximized and will assist  
5 in maintaining the golfer's grip upon the club without increased effort or squeezing pressure applied through the hands. The shape of gripping means 9 then permits the left wrist to uncock upon contact with the golf ball.

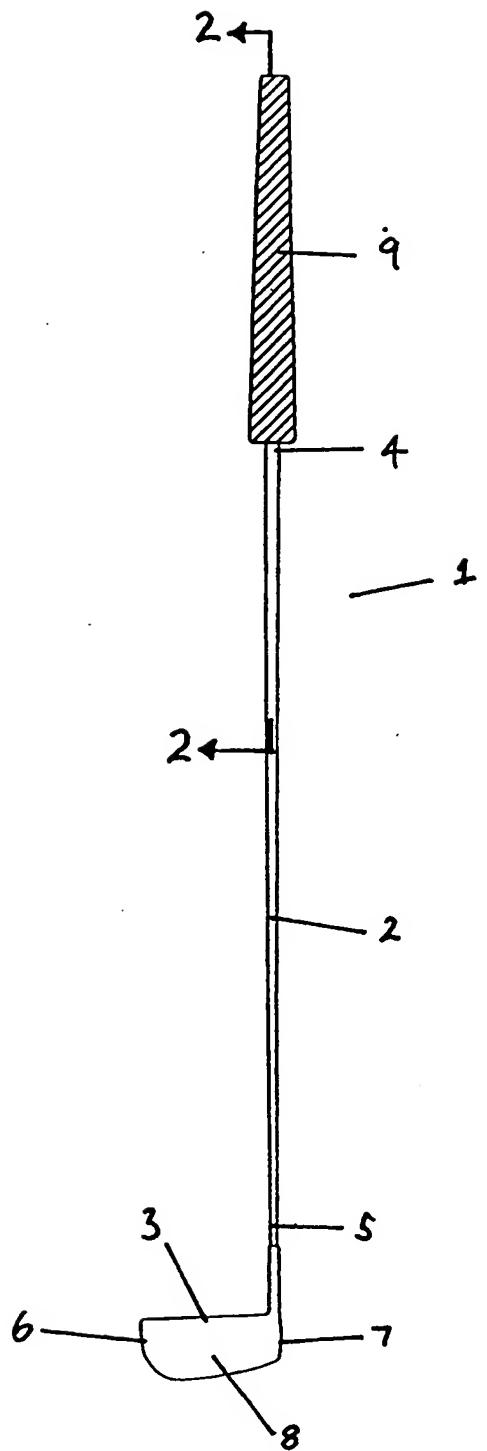
It will therefore be appreciated that golf club 1 and gripping means 9 will permit  
10 golfers having weaknesses in gripping strength to more easily transfer the momentum of the golf swing through the club to the golf ball. In addition, regardless of any inherent weakness in hand strength, the reverse tapered nature of grip means 9 will assist a golfer in maintaining a secure grasp upon the club, without the necessity of applying additional pressure by flexing and tensing hand, wrist and  
15 forearm muscles. Maintaining a secure grip upon the club without tensing such muscle groups enables a golfer to maintain full flexibility and ensure a more complete and controlled transference of momentum and power from the club to the golf ball.

20 It is to be understood that what has been described are the preferred embodiments of the invention and that it may be possible to make variations to these embodiments while staying within the broad scope of the invention. Some of these variations have been discussed while others will be readily apparent to those skilled in the art. For example, while the above discussion is framed from the reference point of a right-handed golfer, it will be appreciated that the invention applies equally and functions  
25 the same for a left-handed golfer.

**I CLAIM:**

1. A golf club comprising a club head, having a ball striking surface, and a longitudinal shaft having first and second ends, said first end of said shaft extending from said club head, said second end of said shaft having gripping means thereon adapted to be grasped by the hands of a golfer, said gripping means having a continuous reverse taper such that the diameter of said gripping means continuously increases in the direction of said club head.  
5
- 10 2. A device as claimed in claim 1 wherein said gripping means is generally circular in cross-section.
- 15 3. A device as claimed in claim 2 wherein the angle of said reverse taper of said gripping means is constant.
4. A device as claimed in claim 3 wherein said gripping means has a generally hollow longitudinal bore extending therethrough, said bore receiving said second end of said shaft to secure said gripping means thereto.
- 20 5. A device as claimed in claim 4 wherein said gripping means is comprised of a rubberized material.
6. A device as claimed in claim 4 wherein said gripping means is leather.

1/4

**SUBSTITUTE SHEET (RULE 26)**

2/4

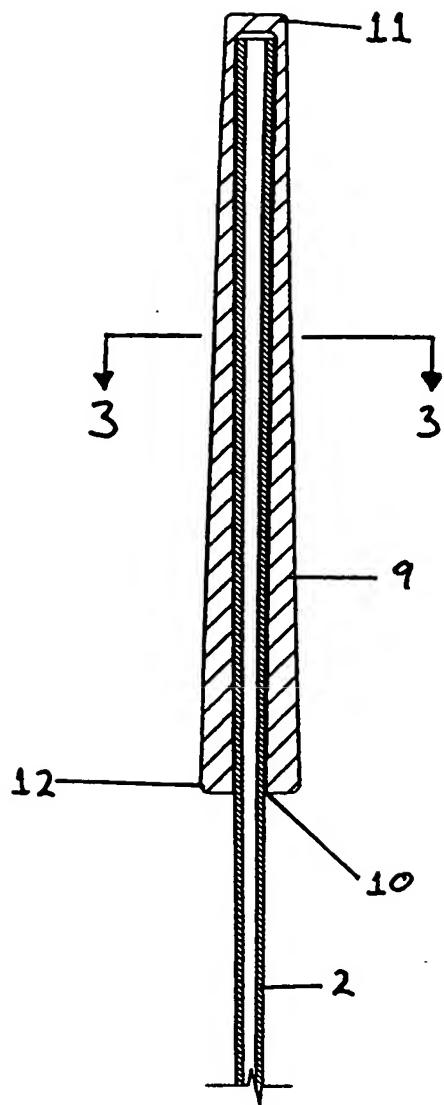


Figure 2

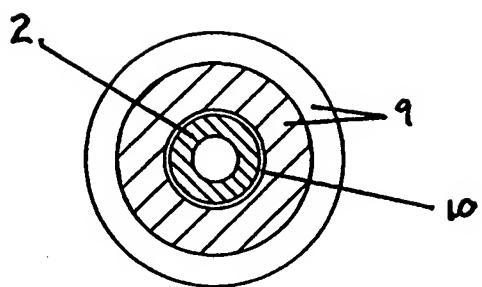


Figure 3

SUBSTITUTE SHEET (RULE 26)

4/4

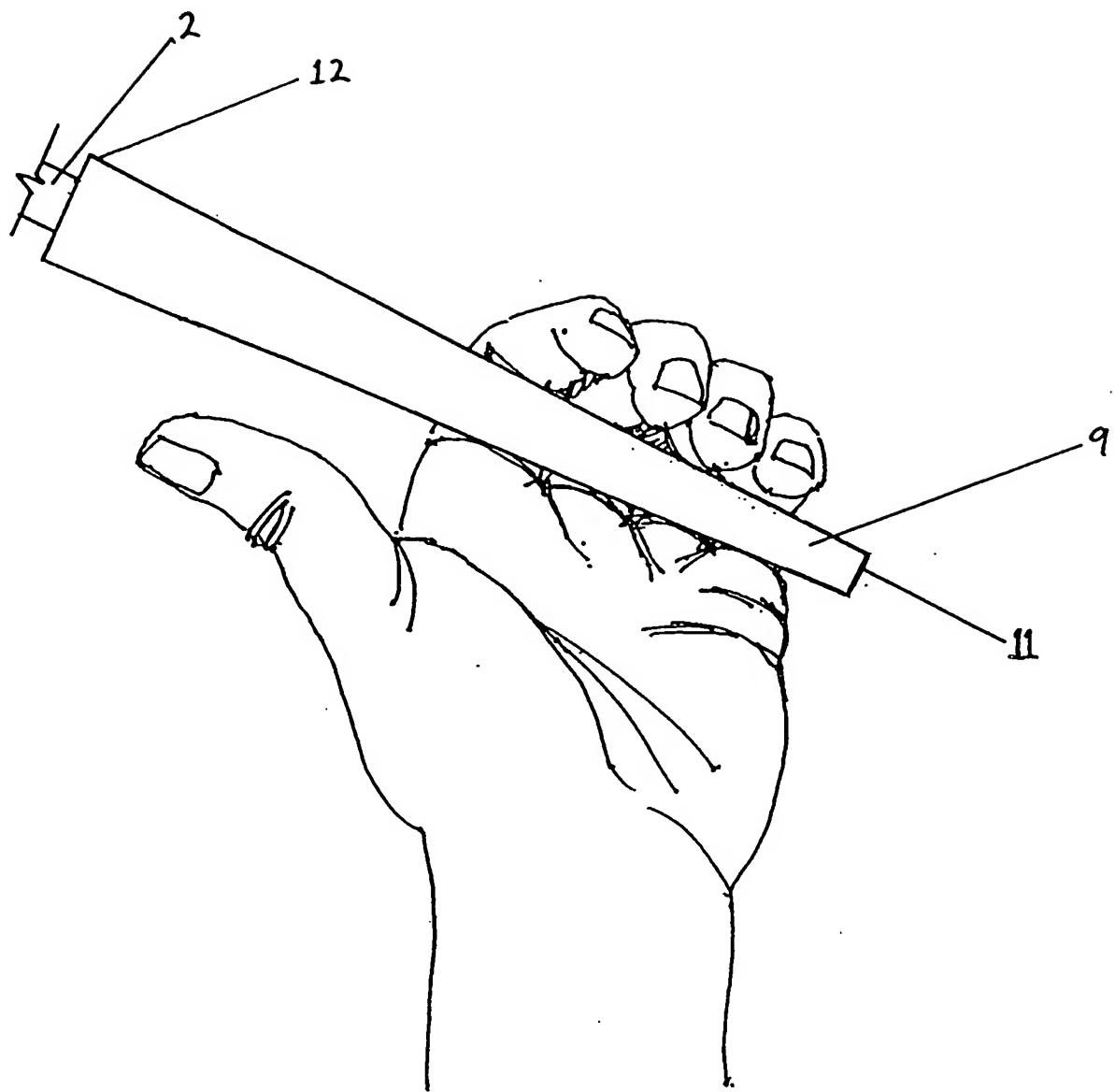


Figure 4

## INTERNATIONAL SEARCH REPORT

Intern'l Application No  
PCT/CA 99/00847

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 A63B53/14

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 A63B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 837 647 A (JACQUES) 24 September 1974 (1974-09-24)	1-5
Y	column 2, line 3 - line 49; figures 1-5	6
Y	GB 979 242 A (ONIONS) 1 January 1965 (1965-01-01) the whole document	6
X	DE 295 21 005 U (BECHLER) 11 July 1996 (1996-07-11) the whole document	1-5
P, X	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 05, 31 May 1999 (1999-05-31) & JP 11 042305 A (BRIDGESTONE SPORTS CO LTD), 16 February 1999 (1999-02-16) abstract	1-5
	-/-	

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

## \* Special categories of cited documents :

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Date of the actual completion of the international search

10 January 2000

Date of mailing of the international search report

18/01/2000

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## INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 92 17247 A (SCHOEN) 15 October 1992 (1992-10-15) page 7, line 8 - line 17; figure 11 —	1-5
A	GB 404 995 A (JABEZ CLIFF & COMPANY) 22 February 1934 (1934-02-22) page 2, line 79 - line 127; figures 1,4 —	1-4,6
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